

Particulate Matter

What is particulate matter?

- Particulate matter is the term used to describe small pieces of aerosol mists, dust, dirt and soot found in the air.
- The U.S. Environmental Protection Agency (U.S. EPA) has further divided particulate matter, which makes up about 55 percent of the total mass of suspended particles in air pollution, into "fine" particles of 2.5 microns or less ($PM_{2.5}$) and "coarse" particles between 2.5 and 10 microns (PM_{10}). A human hair is approximately 50 to 70 microns wide.
- Many man-made and natural sources emit particulate matter directly or emit pollutants that react in the atmosphere to form particulate matter. Generally, any activity that involves burning materials or generating dust is a source of particulate matter.
- Examples of particulate matter sources include industrial smokestacks, exhaust pipes on vehicles, driving on unpaved roads and fireplaces.

Why is particulate matter a concern?

- A number of health effects arise from accumulated particulate matter in the respiratory system.
- When exposed to fine particulate matter, people with lung or heart ailments are at an increased risk of admissions to hospitals or emergency rooms and/or premature death.
- Exposure to particulate matter can trigger asthma attacks or cause wheezing, coughing and respiratory irritation.
- Lung tissue becomes inflamed and respiratory problems, including bronchitis, can develop when exposed to particulate matter.
- Particulate matter is often a major component of regional haze, which impairs visibility. While regional haze is a problem in cities and rural areas, it is especially of concern in pristine areas, such as the Grand Canyon, Mount Rushmore and other national parks, because it impairs visitor's ability to enjoy scenic views.
- Particulate matter can damage buildings, cars and monuments.
- Particulate matter can be carried over long distances and be deposited on soil or in water. It can damage sensitive crops and forests, make lakes and streams acidic and change the nutrient balance in large river basins and coastal waters.

What is being done to reduce particulate matter?

- Particulate matter is one of six criteria pollutants. These pollutants have been identified as being particularly harmful to humans and the environment. National health standards have been developed for the criteria pollutants and are used as measurements of air quality.
- The current federal standard for particulate matter is 50 ug/m^3 averaged over a one-year period and 150 micrograms per cubic meter (ug/m^3) of air averaged over 24 hours. This federal standard is commonly referred to as the " PM_{10} " standard.
- In July 1997, the U.S. EPA set a new, more protective health standard to regulate particulate matter that is less than 2.5 microns in size. These "fine" particles get deeper into the lungs and do more damage. The new standard states that particulate matter levels up to 2.5 microns in diameter ($PM_{2.5}$) must not exceed an average of 15 ug/m^3 each year or an average of 65 ug/m^3 in a 24-hour period.
- The Office of Air Quality (OAQ) issues air permits and conducts inspections to ensure that emissions of a facility will not contribute to the exceedance of the federal health standards for particulate matter.
- OAQ, along with local air pollution control agencies, operates a statewide air quality monitoring system to measure particulate matter levels.

What can I do to reduce particulate matter?

- Avoid using leaf blowers and other dust-producing equipment.
- Drive slowly on unpaved roads and other dirt surfaces.

- Compost leaves, twigs and other yard waste instead of burning them. Composting five pounds of leaves prevents one pound of air pollution.
- Manufactured fire-logs burn hotter and produce less particulate matter than regular wood. If possible, convert wood-burning fireplaces to natural gas to reduce particulate matter even more.
- Instead of burning kitchen scraps, paper products or trash, compost, recycle, or dispose of waste in landfills.
- Keeping your car tuned up, changing the oil, and placing a catalytic converter on older cars helps keep emissions low. Drive your car less and carpool if possible.
- Reduce the amount of energy you use. The majority of Indiana's electric energy comes from burning coal. Turn off lights, televisions, and other appliances when you aren't using them to save energy.

Where can I get more information?

- For more information, contact the Indiana Department of Environmental Management, Office of Air Quality at (800) 451-6027 ext. 3-0178 or visit <http://www.IN.gov/idem/air/>.
- Learn more about the six criteria pollutants at <http://www.epa.gov/region5/air/naaqs/naaqs.htm>.
- Visit the U.S. EPA's Air Quality section for the Midwest at <http://www.epa.gov/region5/> and at <http://www.epa.gov/airnow/>.
- To view Indianapolis's haze camera, visit <http://www.mwhazecam.net/indianapolis.html>.